

**Amendment and Response**

Applicant: Christopher A. Merton

Serial No.: 10/822,885

Filed: April 13, 2004

Docket No.: 10408S01

Title: MAGNETIC RECORDING MEDIUM HAVING A SMOOTH BIAXIALLY TENSILIZED FILM  
SUBSTRATE

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**IN THE CLAIMS**

1. (Currently Amended) A magnetic recording medium for use with a magnetic recording head having a coefficient of thermal expansion comprising a biaxially tensilized substrate having a front side and a backside, a longitudinal direction and a crossweb direction, said substrate having a magnetic layer formed over said front side of said substrate comprising magnetic pigment particles, and a binder system therefor; said magnetic recording medium having a cross web dimensional difference from said magnetic recording head of less than 900 microns/meter over a temperature range of about 35 degrees, and over a relative humidity range of about 70%, and a coefficient of thermal expansion, said coefficient of thermal expansion being from about 50% to about 150% of the coefficient of thermal expansion for said magnetic recording head.
2. (Original) A magnetic recording medium comprising a non-magnetic substrate having a front side and a backside, a magnetic layer formed over said front side of said substrate, said magnetic layer comprising magnetic pigment particles, and a binder system therefor; said substrate being subjected to a biaxial tensilization process, said magnetic recording medium having a coefficient of thermal expansion of from about 5 ppm/C. to about 10 ppm/C and a Wyko surface roughness of less than 10 nm.
3. (Currently Amended) A magnetic recording medium comprising medium suitable for recording using a magnetic recording head having a coefficient of thermal expansion, said magnetic recording medium comprising a non-magnetic substrate having a front side and a backside, a magnetic layer formed over said front side of said substrate, said magnetic layer comprising magnetic pigment particles, and a binder system therefor; said substrate being subjected to a biaxial tensilization process,

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wherein said magnetic recording medium has a coefficient of thermal expansion having a value of from about 5 ppm/C to about 10 ppm/C value, said value being from about 50% to about 150% of the coefficient of thermal expansion for said magnetic recording head.

4. (Original) A magnetic recording medium according to claim 3 wherein said magnetic recording head is formed on a substrate wafer of an  $\text{Al}_2\text{O}_3$ -TiC bi-phase ceramic formed from aluminum oxide and titanium carbide.
5. (Original) A magnetic recording medium according to claim 1 wherein said biaxially tensilized substrate is selected from the group consisting of polyesters, polyolefins, cellulose derivatives, polyamides, and polyimides.
6. (Original) A magnetic recording medium according to claim 3 wherein said biaxially tensilized substrate comprises a substrate subjected to film tensilization, said substrate being selected from the group consisting of polyethylene naphthalate and polyethylene terephthalate.
7. (Original) A magnetic recording medium according to claim 1 wherein said substrate has a thickness of from about 1 to about 10 microns.
8. (Original) A magnetic recording medium according to claim 1 wherein the magnetic recording medium has a crossweb modulus of at least about 7 GPa.
9. (Original) A magnetic recording medium according to claim 1 wherein the magnetic recording medium has a hygroscopic expansion coefficient of less than about 7 ppm/%RH.
10. (Currently Amended) A magnetic recording medium according to claim 1 wherein the magnetic layer comprises a [primary] ferromagnetic pigment, aluminum oxide, a spherical large particle carbon material having a particle size of from about 50 to about 500 nm, a polyurethane

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binder, a non-halogenated vinyl binder, a hardener, a fatty acid ester lubricant, and a fatty acid lubricant.

11. (Currently Amended) A magnetic recording medium according to claim 1 wherein the magnetic layer comprises a [primary] ferromagnetic pigment, aluminum oxide, a spherical large particle carbon material having a particle size of from about 50 to about 500 nm, a polyurethane binder, a polyvinylchloride binder, a hardener, a fatty acid ester lubricant, and a fatty acid lubricant.

12. (New). A magnetic recording medium comprising a biaxially tensilized substrate having a front side and a backside, a longitudinal direction and a crossweb direction, said substrate having a magnetic layer formed over said front side of said substrate comprising magnetic pigment particles, and a binder system therefor; said magnetic recording medium having a cross web dimensional difference from a substrate wafer of an  $\text{Al}_2\text{O}_3$ -TiC bi-phase ceramic formed from aluminum oxide and titanium carbide of less than 900 microns/meter over a temperature range of about 35 degrees, and over a relative humidity range of about 70%, and a coefficient of thermal expansion having a value said magnetic recording medium having a coefficient of thermal expansion of from about 5 ppm/C to about 10 ppm/C, said coefficient of thermal expansion being from about 50% to about 150% of the coefficient of thermal expansion for the substrate wafer.